

REMARKS/ARGUMENT

Claims 1-14 have been canceled herein without prejudice, and claims 15-25 have been added. Accordingly, claims 15-25 are currently pending in the present application. It is respectfully submitted that the new claims do not add new matter and have adequate support throughout the Specification.

Otherwise, Applicants respectfully traverse all claim rejections for the reasons that follow:

I. REJECTIONS OF CLAIMS 1-9 AND 14 UNDER 35 U.S.C. § 102(b)

Claims 1-9 and 14 were rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 5,785,013 to Sinn et al. (hereinafter "Sinn").

Claims 1-9 and 14 have been canceled herein without prejudice, thereby mooting the rejections of these claims. Furthermore, it is respectfully submitted that new claims 15-25 are allowable over Sinn for the reasons discussed below.

Independent claims 15, 18, 20, and 21 each recite an electric motor that is "*controlled to operate inefficiently* if the measured temperature of the cooling fluid is below a normal operating temperature of the internal combustion engine so that waste heat is produced within the electric motor and transferred to the cooling fluid via the thermal coupling between the electric motor and the cooling fluid."

Sinn discloses a cooling body 4 disposed between the pump 2 and the motor 3. (Sinn; col. 2, lines 39-44). The cooling body provides a means by which excess heat produced during normal operation of the motor 3 may be dissipated. (Sinn; col. 2, lines 39-44). As characterized, the cooling body is nothing more than a piece of material having high heat-transfer characteristics. (Sinn; col. 3, lines 11-19).

Unlike the Sinn device, which operates so that waste heat is *dissipated*, claims 15, 18, 20, and 21 operate "so that waste heat is *produced*" and supplied it to the cooling fluid. Furthermore, there is absolutely nothing in Sinn to suggest that the electric motor is "operated inefficiently" during any mode of operation, much less "*operated inefficiently* if the measured

temperature of the cooling fluid is below a normal operating temperature of the internal combustion engine so that waste heat is produced," as recited in claims 15, 18, 20, and 21.

For at least the foregoing reasons, it is respectfully submitted that claims 15, 18, 20, and 21 are allowable over Sinn. Furthermore, since claims 16 and 17 depend from claim 15, since claim 19 depends from claim 18, since claims 22-25 ultimately depend from claim 21, it is respectfully submitted that these claims are allowable over Sinn for at least the same reasons. Withdrawal of the rejections of claims 1-9 and 14 under 35 U.S.C. § 102(b) is therefore kindly requested.

II. REJECTIONS OF CLAIMS 1-10 AND 14 UNDER 35 U.S.C. § 103(a)

Claims 1-10 and 14 were rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 6,425,353 to Davies (hereinafter "Davies") in view of U.S. Patent No. 6,199,528 to Hotta et al. (hereinafter "Hotta").

Claims 1-10 and 14 have been canceled herein without prejudice, thereby mooting the rejections of these claims. Furthermore, it is respectfully submitted that new claims 15-25 are allowable over Davies and Hotta for the reasons discussed below.

Davies and Hotta disclose an engine coolant pumps. As characterized, the pump of Hotta is controllable to generate heat at the phase windings of the electric motor and to transfer this heat to the cooling fluid. In all but one of the disclosed embodiments, heat is produced by supplying current to all windings of a 3-phase motor simultaneously. This causes the motor to stop and the windings to produce heat, which is subsequently transferred to the cooling fluid. In the remaining embodiment of Hotta, one of the windings is supplied with a "phase-shifted" current, which produces excess heat while the motor continues to operate.

In contrast, the claimed embodiments produce excess waste heat in completely different manners. For example, the electric motors of claims 15 and 21 are controlled to produce heat by "supplying alternating forward and reverse exciter currents to the electric motor." The electric motor of claim 18 is controlled to produce heat by supplying current to the motor "that is at least equal to the saturation current limit of the electric motor." The electric motor of claim 20 is controlled to produce heat by "supplying pulse control signals having

impressed ripples to the electric motor." Unlike the "stop-and-go" embodiments of Hotta, which are believed to be stressful on parts of the electric motor, the claims of the present invention permit for a more noiseless and wear-free operation of the electric motor. Furthermore, since, as the Examiner recognized, Davies fails to disclose the controlled generation of heat for heating a cooling fluid, this reference fails to cure the critical deficiencies of Hotta as applied against independent claims 15, 18, 20, and 21.

For at least the foregoing reasons, it is respectfully submitted that claims 15, 18, 20, and 21 are allowable over Davies and Hotta. Furthermore, since claims 16 and 17 depend from claim 15, since claim 19 depends from claim 18, since claims 22-25 ultimately depend from claim 21, it is respectfully submitted that these claims are allowable over Davies and Hotta for at least the same reasons. Withdrawal of the rejections of claims 1-10 and 14 under 35 U.S.C. § 103(a) is therefore kindly requested.

III. CONCLUSION

In view of the foregoing, it is respectfully submitted that all pending claims are currently in allowable condition. Accordingly, reconsideration and prompt allowance of all pending claims is therefore earnestly solicited.

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Name of applicant, assignee or
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December 13, 2004

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